

Use of Recovery Units in Recovery Planning

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History of Recovery Units

Page 4-36 of the *Final ESA Section 7 Consultation Handbook* (March 1998, USFWS and NMFS), states that:

“In the past, exceptions from applying the jeopardy standard to an entire species were granted by memorandum for specific populations or “recovery units” of a species. That process of limiting the exceptions to those populations/recovery units listed in a memo is hereby discontinued and all future exceptions will adhere to the following guidance.”

Guidance on Recovery Units

The Consultation Handbook states:

“Jeopardy Analyses may be based on ... recovery units when those units are documented as necessary to both the survival and recovery of the species in a final recovery plan(s)...”

Guidance on Recovery Units

The *Consultation Handbook* further states that:

- When an action appreciably impairs or precludes the capability of a recovery unit from providing both the survival and recovery function assigned it, that action may represent jeopardy to the species.
- The Biological Opinion should describe how the action affects not only the recovery unit's capability, but the relationship of the recovery unit to both the survival and recovery of the listed species as a whole.

Recovery Units in Existing (Draft and Final) Recovery Plans - not an exhaustive list

Final

- Marbled Murrelet
- Atlantic Coast Piping Plover
- Peninsular Bighorn Sheep in California

Draft

- California Red-legged Frog
- Pacific Coast Western Snowy Plover
- Bulltrout

Atlantic Coast Piping Plover

Although the reasons for delineating recovery units were mostly biological (well distributed populations to reduce vulnerability to environmental variation, assist in recolonization where a population is lost, and increase likelihood of interchange among recovery units), they are delineated by political boundaries:

- Atlantic Canada - 400 pairs
- New England - 625 pairs
- New York-New Jersey - 575 pairs
- DE, MD, VA, NC - 400 pairs

Marbled Murrelet

Delineation of “Conservation Zones” (stated in plan as functional equivalent to Recovery Units) is based on current population and habitat distributions, threats, and geopolitical boundaries:

- Puget Sound (WA)
- W. Washington Coast Range (WA)
- Oregon Coast Range (OR)
- Siskiyou Coast Range (OR/CA)
- Mendocino (CA)
- Santa Cruz Mountains (CA)

Pensinsular Bighorn Sheep (CA)

Delineations made on biological basis, specifically maintaining historical distribution, home range herd memory and connectivity among ewe groups to facilitate re-colonization in the event of localized extirpations. Each of the nine areas below was judged to support at least 25 ewes with associated subadults and rams.

- San Jacinto Mountains
- Santa Rosa Mountains – N of HW 74
- Santa Rosa Mountains – S of HW 74 through Martinez Canyon
- Santa Rosa Mountains – S of Martinez Canyon
- Coyote Canyon
- N San Ysidro Mountains (County Road S-22 to State HW 78)
- Vallecito Mountains
- Carrizo Canyon/Tierra Blanca Mountains/Coyote Mountains area

Bulltrout - still in early stages

- Although jurisdictional and logistical concerns were considered when identifying recovery units, they are delineated on a biological basis in that they are groupings of bull trout for which gene flow either was historically likely, or is presently possibly.
- The boundaries of recovery units are represented by isolated basins, major river basins and collections of basins.

CA Red-legged Frog

Red-legged Frogs in each of the RUs experienced similar conservation needs and population statuses, allowing for a tailored management approach. Watershed boundaries and elevation contours were used for deliniation.

- Sierra Nevada
- N coast foothills & Western Sacramento River
- N San Francisco Bay/N Coast
- S and E San Francisco Bay
- Central Coast
- Diablo Range/Salina Valley
- Northern Transverse Range and Tehachapi Mountains
- Southern Transverse Range and Peninsular Ranges

Pacific Western Snowy Plover

Habitat plays a key role in Pacific Western Snowy Plover recovery. Land ownership within habitat include Federal, State, Local and Municipal Governments and Private lands. Each have important roles in recovery efforts and “participation plans” by local interests integral to recovery efforts.

<u>Recovery Unit</u>	<u>Breeding Adults</u>
• Washington and Oregon	250
• Del Norte to Mendocino Counties, CA	150
• San Francisco Bay, CA	500
• Sonoma to Monterey Counties, CA	400
• San Luis Obispo to Ventura Counties, CA	1,200
• Los Angeles to San Diego Counties, CA	500

Why Recovery Units are Delineated

- Maintain distribution within range (BT, MM, PP, SP, RLF)
- Population increases should be distributed throughout range (SP)
- Facilitate interchange of genetic material between subpopulations (PP, MM, BHS, SP)
- In short term, maintain genetic fitness and productivity of populations (BT, MM, PP, SP)
- In long term, enhance survival (decrease risk of extinction) by maintaining adaptive ability/ evolutionary potential (BT, MM, PP, BHS, SP)
- Tailor management to specific areas/threats, which vary widely throughout distribution (BT, MM, SP, RLF)

Why Recovery Units are Delineated

- Promote recolonization of any sites that experience declines or local extirpations due to low productivity or temporary habitat loss (PP, MM, SP)
- Reduce variance in survival and productivity of the species (PP, SP)
- Buffer species' vulnerability to environmental fluctuations and catastrophes (floods, fire, windstorms, oceanic conditions, disease, oil spills) (MM, PP, SP)
- Enhance ability of species to rebound from adverse impacts (esp. because of species' slow reproductive rate) (MM, PP, BHS)

How Recovery Units are delineated

- Mostly biological basis - genetic flow either historically likely or presently possible (BT, BHS)
- Physical characteristics, isolated basins, major river basins and collections of basins (BT), watershed boundaries and elevation contours (RLF)
- Maintenance of range herd memory (BHS)
- Current habitat distributions (large tracts of older forests near coasts) (MM)
- Current population distributions (MM)/Statuses (RLF)

How Recovery Units are Delineated

- Connectivity among ewes to facilitate recolonization (BHS)
- Account for some jurisdictional and logistical concerns (BT)
- Political boundaries: International - Atlantic Canada/ New England (PP); State borders (PP, MM, BT)
- Similarity of Threats/Conservation needs (MM, RLF)
- Make each recovery unit sufficiently large that overall carrying capacity is buffered from changes due to natural habitat formation processes at individual nesting sites, while assuring a geographically well-distributed population (PP)

Advantages of Recovery Units

- Maintains adaptive ability via genetic and phenotypic diversity and adaptive traits (BT, MM, BHS)
- Lessens vulnerability of slow-growing species (MM, BHS)
- Allows for focused, long-term planning necessary for old-growth nesting species (MM)
- Effectively conserves species that exhibit fidelity to their natal region, but have regular, if low, levels of dispersal (therefore not a DPS) (PP)
- Ensures protection of a “source” population (Higgin’s eye pearly mussel)

Advantages of Recovery Units (but not unique to recovery units)

- Encourage implementation by local interests (BT, SP)
- Geopolitical boundary allows for state management tool (MM-HCP in WA, PP)
- Allows for management of different threats in different areas, e.g., net fisheries, urban growth, forest practices (MM)
- Allows for focused habitat management (eg., artificial ponds for breeding) (RLF)
- Places widely distributed species on smaller spatial scales for easier management and planning (BT)
- Helps design of management actions (MM, RLF)
- Allows for evaluation of impacts at several scales (within parks, within zones, overall) (MM)